

## Range Planting - 550 DESIGN AND INSTALLATION GUIDE

Range Planting shall be planned and applied in accordance with the standard detailed in Section IV of the Field Office Technical Guide. This document provides conservation additional parameters, recommendations, references, and requirements for developing site-specific plans for this practice.

### **1. Refer to ND Technical Note #14 for:**

- Seeding dates (Part 1)
- Seedbed preparation (Part 2)
- Seeding equipment (Part 3)
- Drill Calibration (Part 4)
- Seed requirements (Part 5)
- Seeding depth (Part 6)
- Cover and companion crops (Part 7)
- Management and protection during establishment (Part 8)
- Procedure for stand evaluation (Part 9)

### **2. Selecting Species and Varieties**

- a. Determine the Ecological (Range) Site based on soils, from Section II-E of the Field Office Technical Guide.
- b. Refer to Table 1 of this specification for recommended species and percent minimums and maximums for the Ecological Site(s).
- c. Refer to ND-Technical Note 14 for approved named varieties and full seeding rates of native grasses, forbs and shrubs. Use named varieties when available.

### **3. Planning Considerations**

- a. Where water erosion is a concern, all tillage and seeding operations should be performed across the general slope of the fields where appropriate. When seeding into light textured soils, adequate cover is required to prevent excessive erosion.
- b. For improved germination, scarification of legumes with hard seed coats is recommended. Scarification is especially important with the following species: purple prairie clover, white prairie clover, leadplant and Canada milkvetch.
- c. Slender wheatgrass and Canada Wildrye are short-lived species, but establish rapidly and provide quick cover.

**4. Guidelines for stand evaluation**

- a. Stand must have a minimum density of two rhizomatous grass plants per square foot, or four plants per square foot for bunchgrasses or mixtures of bunch and rhizomatous type grasses; or in the case of grass/legume/forb mixtures, two grass plants and one legume or forb plant per square foot.
- b. See Part 9 of ND Plant Materials Technical Note 14 for additional guidance on stand evaluation.

**5. Established stand management**

- a. Refer to Practice 528A, Prescribed Grazing, for management after establishment.

**6. Documentation**

- a. Use ND-CPA-9 (electronic or hardcopy) to document practice planning and installation.

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**TABLE 1. Ecological (Range) Site Recommended Species for MLRA 53 A&B**

Minimum and Maximum Percentage of Species per Site (Four Grass Species Minimum, all Seeding Mixtures must equal 100%)

Species	Wetland and Wet Meadow	Subirrigated	Limy Subirrigated	Overflow	Saline Lowland	Closed Depression 1/	Sandy	Sands	Thin Sands	Clayey	Silty	Thin Upland and Shallow	Claypan and Thin Claypan	Shallow to Gravel and Very Shallow
Grasses: 2/														
American sloughgrass	5-10													
Beardless wildrye					10-30									
Big bluestem		20-40	20-40	20-40			5-10				10-20			
Bluebunch wheatgrass												5-10		5-10
Blue grama		5-10	5-10	5-10			5-10	5-10	10-20	5-10	5-10	5-10	10-20	10-20
Canada wildrye	5-10	5-10	5-10	5-10	5-10		5-10	10-20	10-20		5-10	5-10		5-10
Green needlegrass		10-20	5-10	10-30			10-30	5-10		20-40	20-30	10-20	10-20	5-10
Indiangrass		5-10	5-10	5-10							5-10			
Little bluestem		5-15	15-35	5-10			5-10	10-20	20-30			20-40	5-10	20-40
Needle and Thread				5-10			5-10	10-20	10-20	5-10	5-10	5-10	10-20	10-20
Nuttall alkaligrass					10-30	10-20								
Porcupinegrass		5-10	5-10	5-10			5-10	5-10		5-10	5-10	5-10		
Prairie cordgrass	40-60	5-10	5-10		10-20	5-10								
Prairie dropseed			5-10	5-10										
Prairie junegrass		5-10	5-10	5-10		5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10
Prairie sandreed							10-25	20-40	20-40			5-10		5-10
Reed canarygrass	5-10													
Sand bluestem							10-20	20-40	20-40					5-10
Sand dropseed							5-10	5-10	5-10					5-10
Sideoats grama		5-10	5-15	10-20			5-10	10-20	10-20	10-20	10-30	10-30	5-10	20-30
Slender wheatgrass		5-10	5-10	5-10	10-20	10-20	5-10			5-10	5-10	5-10	10-20	10-20
Switchgrass	10-40	10-20	10-20	5-10	10-20		5-10			5-10	5-10		5-10	
Western wheatgrass	10-40	10-20	10-20	10-20	30-50	30-90	10-30	10-20	5-10	10-30	10-30	10-20	30-50	10-20

1/ On this site a minimum of three species must be planted.

2/ Minimum of four grasses, at least one warm and/or cool season species.

3/ The maximum percentage that forbs and shrubs can make of a seeding is 10%

4/ These species will be limited to no more than 2%

Natural Resources Conservation Service – North Dakota

TABLE 1. **Ecological (Range) Site Recommended Species for MLRA 53 A&B - continued**

Minimum and Maximum Percentage of Species per Site (Four Grass Species Minimum, all Seeding Mixtures must equal 100%)

Species	Wetland and Wet Meadow	Subirrigated	Limy Subirrigated	Overflow	Saline Lowland	Closed Depression 1/	Sandy	Sands	Thin Sands	Clayey	Silty	Thin Upland and Shallow	Claypan and Thin Claypan	Shallow to Gravel and Very Shallow
Black-eyed susan	*	*	*	*			*	*	*	*	*	*	*	*
Blanketflower							*			*	*	*	*	*
Canada milkvetch		*	*	*			*	*	*	*	*		*	
Cudweed sagewort 4/				*			*	*	*		*		*	
Dotted gayfeather							*	*	*	*	*	*	*	*
Lewis flax		*	*				*	*		*	*	*		
Maximillian sunflower	*	*	*	*			*	*		*	*			
Plains Coreopsis	*	*	*	*			*			*	*			
Prairie coneflower 4/							*	*	*	*	*	*	*	*
Purple coneflower								*	*		*	*		*
Purple prairieclover				*			*	*	*	*	*	*	*	*
Shell-leaf penstemon							*	*	*					
Stiff sunflower	*	*	*	*			*	*	*	*	*	*	*	*
Western yarrow 4/		*	*	*	*	*	*	*	*	*	*	*	*	*
White prairieclover		*	*	*			*			*	*	*	*	*
Shrubs 3/														
Leadplant				*			*	*	*	*	*	*		*
Prairie rose		*	*				*	*	*	*	*	*	*	*
Western snowberry		*	*	*			*	*		*	*	*		*

1/ On these sites a minimum of three species must be planted.

2/ Minimum of four grasses, at least one warm and/or cool season species.

3/ The maximum percentage that forbs and shrubs can make of a seeding is 10%

4/ These species will be limited to no more than 2%

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**TABLE 1. Ecological (Range) Site Recommended Species for MLRA 55A, 55B & 56**

Minimum and Maximum Percentage of Species per Site (Four Grass Species Minimum, All Seeding Mixtures will equal 100%)

Species	Wetland and Wet Meadow	Subirrigated	Limy Subirrigated	Overflow	Saline Lowland	Sandy	Sands	Thin Sands	Clayey	Silty	Thin Upland	Claypan and Thin Claypan	Shallow to Gravel and Very Shallow	Subirrigated Sands
Grasses 1/														
American sloughgrass	5-10													
Beardless wildrye					20-40									
Big bluestem		20-50	15-40	20-40		10-20				10-20				20-30
Blue grama			5-10	5-10		5-10	5-10	10-20	5-10	5-10	5-10	10-20	10-20	5-10
Canada wildrye	5-10	5-10	5-10	5-10	5-10	5-10	10-20	10-20		5-10	5-10			10-20
Green needlegrass		5-10	5-10	10-20		10-30	5-10		20-40	20-40	10-20	10-20	5-10	5-10
Indiangrass		5-25	10-20	10-20						5-10				
Little bluestem		5-25	15-40	5-20		5-20	10-20	20-30			20-40	5-10	20-40	
Needle and Thread				5-10		5-10	10-20	10-20	5-10	5-10	5-10	10-20	10-20	10-20
Nuttall alkaligrass					10-20									
Porcupinegrass			5-10	5-10		10-20	5-10		5-10	5-10	5-10			5-10
Prairie cordgrass	40-60	5-25	5-10	5-10	10-20									
Prairie dropseed				5-10										
Prairie junegrass						5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10
Prairie sandreed						10-20	20-40	20-40			5-10		5-10	10-30
Reed canarygrass	5-10													
Sand bluestem						10-20	20-40	20-40					5-10	5-10
Sand dropseed						5-10	5-10	5-10					5-10	
Sideoats grama		10-20	10-20	10-20		5-10	10-20	10-20	10-20	10-30	20-30	5-10	10-20	10-20
Slender wheatgrass		5-10	5-10	5-10	10-20	5-10			5-10	5-10	5-10	10-20	10-20	
Switchgrass	10-40	5-25	10-20	10-20	10-20	5-10			10-20	5-10		5-10		5-10
Western wheatgrass	10-40	5-25	10-20	10-20	30-50	10-30	5-10	5-10	10-30	10-30	10-20	30-50	10-20	10-20
Whitetop 2/	5-30*													

1/ Minimum of four grasses, at least one warm and/or cool season species.

2/ This species can only be seeded in Wetland sites

3/ The maximum percentage that forbs and shrubs can make of a seeding is 10%

4/ These species will be limited to no more than 2%

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**TABLE 1. Ecological (Range) Site Recommended Species for MLRA 55A, 55B & 56 - continued**

Minimum and Maximum Percentage of Species per Site (Four Grass Species Minimum, All Seeding Mixtures will equal 100%)

Species	Wetland and Wet Meadow	Subirrigated	Limy Subirrigated	Overflow	Saline Lowland	Sandy	Sands	Thin Sands	Clayey	Silty	Thin Upland	Claypan and Thin Claypan	Shallow to Gravel and Very Shallow	Subirrigated Sands
Black-eyed susan 4/	*	*	*	*		*	*	*	*	*	*	*	*	*
Blanketflower						*			*	*	*	*	*	
Canada milkvetch		*	*	*		*	*	*	*	*		*		
Cudweed sagewort 4/				*		*	*	*		*		*		*
Dotted gayfeather						*	*	*	*	*	*	*	*	
Lewis flax		*	*	*		*	*		*	*	*			*
Maximilian sunflower	*	*	*	*		*	*		*	*		*		*
Plains Coreopsis	*	*	*	*		*			*	*				
Prairie coneflower 4/						*	*	*	*	*	*	*	*	*
Purple coneflower							*	*		*	*		*	
Purple prairieclover				*		*	*	*	*	*	*	*	*	*
Shell-leaf penstemon						*	*	*						*
Stiff sunflower	*	*	*	*		*	*	*	*	*	*	*	*	*
Western yarrow 3/		*	*	*	*	*	*	*	*	*	*	*	*	*
White prairieclover		*	*	*		*			*	*	*	*	*	
Shrubs 3/														
Leadplant				*		*	*	*	*	*	*		*	*
Prairie rose		*	*			*	*	*	*	*	*	*	*	*
Western snowberry		*	*	*		*	*		*	*	*		*	*

1/ Minimum of four grasses, at least one warm and/or cool season species.

2/ This species can only be seeded in Wetland sites

3/ The maximum percentage that forbs and shrubs can make of a seeding is 10%

4/ These species will be limited to no more than 2%

Natural Resources Conservation Service – North Dakota

TABLE 1. **Ecological (Range) Site Recommended Species for MLRA 54 & 58 C&D**

Minimum and Maximum Percentage of Species per Site (Four Grass Species Minimum, All Seeding Mixtures must equal 100%)

Pending ECO SITES	Wetland and Wet Meadow	Subirrigated	Limy Subirrigated	Loamy Overflow	Loamy Terrace	Sandy Terrace	Clayey Terrace	Saline Lowland	Closed Depression 1/	Sandy	Sands	Clayey
Range Sites	Wetland and Wet Meadow	Subirrigated	Limy Subirrigated	Frequently Flooded Overflow	Loam Textured Occasional flooding Overflow	Sandy Textured Occasional flooding Overflow	Clayey Textured Occasional flooding Overflow	Saline Lowland	Closed Depression 1/	Sandy	Sands	Clayey
<b>Species</b>												
Grasses 2/:												
American sloughgrass	5-10											
Beardless wildrye								5-10				
Big bluestem		10-35	20-35	20-35	20-30	5-10				5-10		
Bluebunch wheatgrass												
Blue grama				5-10	5-10	5-10	5-10			5-10	5-10	10-20
Canada wildrye	5-10	5-10	5-10	5-10	5-10	10-20		5-10		5-10	10-20	
Green needlegrass		10-25	5-10	10-25	10-30	10-20	20-40			10-25		20-40
Indiangrass			5-10	5-10								
Little bluestem		5-10	10-30	5-10		5-10	5-10			5-10	10-20	
Needle and Thread				5-10	5-10	5-10	5-10			5-10	10-20	5-10
Nuttall alkaligrass								10-30	10-20			
Porcupinegrass		5-10	5-10	5-10	10-20	5-10	5-10			5-10		5-10
Prairie cordgrass	40-60	5-10	5-10	5-10				10-20	5-10			
Prairie dropseed			5-10	5-10	5-10							
Prairie junegrass		5-10	5-10	5-10	5-10	5-10	5-10			5-10	5-10	5-10
Prairie sandreed						20-30				10-25	20-40	
Reed canarygrass	5-10											
Sand bluestem						20-30				10-20	20-40	
Sand dropseed						5-10				5-10	5-10	
Sideoats grama			5-10	10-20	10-20	5-10	10-20			5-10	10-20	10-20
Slender wheatgrass	5-10	5-10	5-10	5-10	5-10	5-10	5-10	10-20	10-20	5-10		5-10
Switchgrass	5-10	10-20	10-20	10-20	5-10	5-10	5-10	5-10		5-10		
Western wheatgrass	10-40	10-20	10-20	10-20	10-30	10-20	20-40	30-60	30-90	10-30	10-20	20-35

1/ Minimum of four grasses, at least one warm and/or cool season species.

2/ This species can only be seeded in Wetland sites

3/ The maximum percentage that forbs and shrubs can make of a seeding is 10%

4/ These species will be limited to no more than 2%

Natural Resources Conservation Service – North Dakota

TABLE 1. **Ecological (Range) Site Recommended Species for MLRA 54 & 58 C&D - continued**

Minimum and Maximum Percentage of Species per Site (Four Grass Species Minimum, All Seeding Mixtures must equal 100%)

<b>Pending ECO SITES</b>	Wetland and Wet Meadow	Subirrigated	Limy Subirrigated	Loamy Overflow	Loamy Terrace	Sandy Terrace	Clayey Terrace	Saline Lowland	Closed Depression 1/	Sandy	Sands	Clayey
<b>Range Sites</b>	Wetland and Wet Meadow	Subirrigated	Limy Subirrigated	Frequently Flooded Overflow	Loam Textured Occasional flooding Overflow	Sandy Textured Occasional flooding Overflow	Clayey Textured Occasional flooding Overflow	Saline Lowland	Closed Depression 1/	Sandy	Sands	Clayey
Cudweed sagewort 4/		*		*	*	*	*			*	*	*
Dotted gayfeather					*	*	*			*	*	*
Maximillian sunflower	*	*	*	*	*	*	*					
Plains Coreopsis	*	*	*	*								
Prairie coneflower 4/					*	*	*			*	*	*
Purple coneflower					*						*	
Purple prairieclover		*	*	*	*	*	*			*	*	*
Shell-leaf penstemon						*				*	*	
Stiff sunflower	*	*	*	*	*	*	*			*	*	*
Western yarrow 4/		*	*	*	*	*	*	*	*	*	*	*
Shrubs 3/												
Fourwing Saltbush								*				
Leadplant				*	*	*	*			*	*	
Prairie rose		*	*		*	*	*			*	*	*
Western snowberry		*	*	*	*	*	*			*	*	*
Winterfat					*		*					*

1/ On these sites a minimum of three species must be planted.

2/ Minimum of four grasses, at least one warm and/or cool season species.

3/ The maximum percentage that forbs and shrubs can make of a seeding is 10%

4/ These species will be limited to no more than 2%



Natural Resources Conservation Service – North Dakota

TABLE 1. **Ecological (Range) Site Recommended Species for MLRA 54 & 58 C&D - continued**

Minimum and Maximum Percentage of Species per Site (Four Grass Species Minimum, All Seeding Mixtures must equal 100%)

<b>Pending ECO SITES</b>	Loamy	Thin Loamy	Thin Sandy	Thin Clayey	Thin Sands	Shallow Loamy	Shallow Sandy	Shallow Clayey	Claypan and Thin Claypan	Sandy Claypan	Very Shallow
<b>Range Sites</b>	Silty	Loamy Textured Thin Upland and Shallow	Sandy Textured Shallow	Clayey Textured Shallow	Thin Sands	Shallow	Shallow and Shallow to Gravel	Shallow Clay	Claypan and Thin Claypan	Sandy Claypan	Very Shallow
<b>Species</b>											
Grasses 2/:											
American sloughgrass											
Beardless wildrye											
Big bluestem	10-20										
Bluebunch wheatgrass		10-20		10-20		10-20		10-20			10-20
Blue grama	5-10	5-10	5-10	10-20	5-10	20-30	10-20	20-30	10-30	5-10	10-20
Canada wildrye	5-10	5-10	10-20		10-20	5-10	10-20			10-20	
Green needlegrass	20-30	10-20	5-10	10-20		5-10	5-10	5-10	10-20	10-20	5-10
Indiangrass											
Little bluestem		20-30	20-30	10-20	20-30	20-30	20-30	10-20	5-10	10-20	20-30
Needle and Thread	5-10	5-10	10-20		10-20	10-20	10-20		10-20	10-20	10-20
Nuttall alkaligrass											
Porcupinegrass	5-10	5-15		5-10							
Prairie cordgrass											
Prairie dropseed											
Prairie junegrass	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10
Prairie sandreed			20-30		20-40		20-30			10-30	5-10
Reed canarygrass											
Sand bluestem			20-30		20-40		20-30			10-20	5-10
Sand dropseed			5-10		5-10		5-10			5-10	5-10
Sideoats grama	10-30	20-30	10-20	20-30	10-20	20-30	20-30	20-30	5-10	10-20	20-30
Slender wheatgrass	5-10	5-10		5-10		10-20		10-20	10-20	10-20	10-20
Switchgrass											
Western wheatgrass	20-30	10-20	10-20	20-30	5-10	10-20	5-10	20-30	30-50	20-35	10-20

1/ On these sites a minimum of three species must be planted.

2/ Minimum of four grasses, at least one warm and/or cool season species.

3/ The maximum percentage that forbs and shrubs can make of a seeding is 10%

4/ These species will be limited to no more than 2%

Natural Resources Conservation Service – North Dakota

TABLE 1. **Ecological (Range) Site Recommended Species for MLRA 54 & 58 C&D - continued**

Minimum and Maximum Percentage of Species per Site (Four Grass Species Minimum, All Seeding Mixtures must equal 100%)

<b>Pending ECO SITES</b>	Loamy	Thin Loamy	Thin Sandy	Thin Clayey	Thin Sands	Shallow Loamy	Shallow Sandy	Shallow Clayey	Claypan and Thin Claypan	Sandy Claypan	Very Shallow
<b>Range Sites</b>	Silty	Loamy Textured Thin Upland and Shallow	Sandy Textured Shallow	Clayey Textured Shallow	Thin Sands	Shallow	Shallow and Shallow to Gravel	Shallow Clay	Claypan and Thin Claypan	Sandy Claypan	Very Shallow
Forbs 3/											
American vetch	*										
Blanketflower	*	*		*			*	*	*	*	*
Canada milkvetch											
Cudweed sagewort 4/	*								*	*	
Dotted gayfeather	*	*	*	*	*	*	*	*		*	*
Maximilian sunflower	*										
Plains Coreopsis											
Prairie coneflower 4/	*	*	*	*	*	*	*	*	*	*	*
Purple coneflower		*	*	*	*	*	*	*		*	*
Purple prairieclover	*	*	*	*	*	*	*	*		*	*
Shell-leaf penstemon			*		*					*	
Stiff sunflower	*	*	*	*	*	*	*	*	*	*	*
Western yarrow 4/	*	*	*	*	*	*	*	*	*	*	*
Shrubs 3/											
Fourwing Saltbush								*	*		
Leadplant	*		*		*					*	
Prairie rose	*	*	*	*	*	*	*	*	*	*	*
Western snowberry	*										
Winterfat	*	*		*		*		*	*		

1/ On these sites a minimum of three species must be planted.

2/ Minimum of four grasses, at least one warm and/or cool season species.

3/ The maximum percentage that forbs and shrubs can make of a seeding is 10 percent

4/ These species will be limited to no more than 2%